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Research

Educators and students prefer traditional clinical education to a peer-assisted learning model, despite similar student performance outcomes: a randomised trial

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KEY WORDS

Education
Professional
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ABSTRACT

Question: What is the efficacy and acceptability of a peer-assisted learning model compared with a traditional model for paired students in physiotherapy clinical education? **Design**: Prospective, assessor-blinded, randomised crossover trial. **Participants**: Twenty-four physiotherapy students in the third year of a 4-year undergraduate degree. **Intervention**: Participants each completed 5 weeks of clinical placement, utilising a peer-assisted learning model (a standardised series of learning activities undertaken by student pairs and educators to facilitate peer interaction using guided strategies) and a traditional model (usual clinical supervision and learning activities led by clinical educators supervising pairs of students). **Outcome measures**: The primary outcome measure was student performance, rated on the Assessment of Physiotherapy Practice by a blinded assessor, the supervising clinical educator and by the student in self-assessment. Secondary outcome measures were satisfaction with the teaching and learning experience measured via survey, and statistics on services delivered. **Results**: There were no significant between-group differences in Assessment of Physiotherapy Practice scores as rated by the blinded assessor ($p = 0.43$), the supervising clinical educator ($p = 0.94$) or the students ($p = 0.99$). In peer-assisted learning, clinical educators had an extra 6 minutes/day available for non-student-related quality activities (95% CI 1 to 10) and students received an additional 0.33 entries/day of written feedback from their educator (95% CI 0.06 to 0.61). Clinical educator satisfaction and student satisfaction were higher with the traditional model. **Conclusion**: The peer-assisted learning model trialled in the present study produced similar student performance outcomes when compared with a traditional approach. Peer-assisted learning provided some benefits to educator workload and student feedback, but both educators and students were more satisfied with the traditional model. **Trial registration**: ACTRN12610000859088.
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Introduction

Health workforce shortages have been identified as a major issue worldwide.[1] In Australia, the increasing demand for healthcare workers is challenging training and service delivery systems.[2] Health Workforce Australia identified 'creating a more efficient training system' as an important objective for 2012–2013.[3] There has been a substantial increase in the number of entry-level physiotherapy programs in Australia in the past decade,[4] but national shortages of physiotherapists persist.[5] Clinical education is a prerequisite for program accreditation;[6] however, the rising student numbers is challenging the capacity of health service organisations to deliver this fundamental component of physiotherapy education.[4]

Assigning multiple students to one educator in physiotherapy clinical placements is one strategy being adopted to cope with this increase in demand, and the popularity of the 2:1 or 'paired' model — where two students are supervised by one clinical educator — is growing. In theory, the paired model offers an immediate increase in capacity, compared to the 1:1 model traditionally used in physiotherapy placements. However, a search of four databases (Medline, CINAHL, SCOPUS and ERIC) up to June 2011, using key search terms synonymous with peer-assisted learning and physiotherapy, yielded no randomised trials and little evidence of the actual effects of paired student models on student, educator or patient outcomes.[7–11] Physiotherapy clinical educators consider peer-assisted learning models to be feasible[8,9,12] and some prefer this to the 1:1 model.[12] Those authors recommend implementation of the paired student model in physiotherapy and reference the need for clinical educators to be prepared to facilitate peer engagement. Despite the recommendation for the paired model, no

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studies have provided a reproducible framework, set of activities or specific tools to assist educators and learners in applying the model.

Topping and Ehly[13] defined peer-assisted learning as 'the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions'. Implementation of paired student placements might vary for several reasons, such as student and clinical educator preparation, placement environment and the cohesion of the student-peer relationship.[8,9,12,14–16] Peer interactions may take place in a number of ways – from purely social support to formalised peer-assisted learning tasks. There is little knowledge of how particular aspects of the peer interaction contribute to learning and how to maximise the impact on learning outcomes.

Qualitative investigations into physiotherapy education models have reported that the company of another student on placement reduces student anxiety and aids learning.[12,15–17] No study provided a description or evaluation of the amount or type of peer interaction occurring within the paired placements. A model of paired student clinical education that specifically aims to facilitate peer-assisted learning may present immediate benefits within the placement and help to develop more sustainable and productive learner behaviours.[18] The ability to collaborate with peers is highly valued by workplaces[19] and is particularly important in the provision of effective healthcare.[20]

Therefore, the research questions for the present study were:

1. What are the effects of a paired student placement model that incorporates specifically facilitated peer-assisted learning activities, compared to a traditional teaching approach, on student performance outcomes measured by external assessors blinded to group allocation, clinical educators and student self-assessment?
2. What are the effects of these models on the frequency of student and educator participation in different learning/teaching activities, and the effects on their satisfaction with the clinical placement?

Method

Design

This trial was a prospective, randomised, crossover trial comparing two models of physiotherapy clinical undergraduate education: a traditional paired model and a peer-assisted learning paired model (Figure 1).

Participants and setting

The trial was conducted in a tertiary metropolitan health service from June to October 2011. Participating sites included three acute hospitals, one sub-acute inpatient centre and one outpatient rehabilitation centre. Physiotherapy students from Monash University, in the third year of a four-year undergraduate degree, were eligible for inclusion if they were allocated to clinical placements at the health service. There were no exclusion criteria.

Procedure

Students were randomly paired and allocated to either traditional or peer-assisted learning groups for the duration of their 5-week cardiorespiratory and neurology clinical placements. Student pairs remained the same for both placements. Before random allocation occurred, a university staff member who was not involved in the project allocated students to placements at the participating health service, based on student preferences. Prior to the commencement of the study, participating clinical educators were engaged in four 2-hour workshops that focused on development and facilitation of a peer-assisted learning model.[21] Students attended a 2-hour tutorial on the first day of their peer-assisted learning placement, at which they were introduced to the tools and expectations of the peer-assisted learning model. Blinded assessors with experience in using the Assessment of Physiotherapy Practice were seconded from the university and other health services, and remunerated for their time.

Intervention

Peer-assisted learning model

In the absence of any published operational peer-assisted learning model, the literature was mined for tools and frameworks that could be used to facilitate peer-assisted learning between student pairs. Clinical educators participating in the trial worked collaboratively to develop the model, utilising an iterative process that included four workshops, culminating in consensus (process and outcomes reported in more detail elsewhere).[21] The final model included a standardised series of tools that were utilised by students and educators during the peer-assisted learning clinical placements (Table 1), in addition to typical learning activities such as involvement in patient care, team meetings, tutorials and administration. The peer-assisted learning tools could be used as required, but a minimum number of applications was mandated (Table 1). The minimum frequency was nominated by participating clinical educators in the workshops, based on the literature reviewed, and educator experience and opinions on model feasibility. While the peer-assisted learning framework encouraged students to work with and learn from each other, the responsible clinical educator had supervisory responsibilities of minimising risk to patients and students, providing formative and summative feedback and assessment, and providing appropriate education/guidance.

Usual supervision (traditional model)

The traditional model involved delivery of supervision according to the usual practice of the clinical educators when supervising pairs of students. This was not standardised but was characterised by supervisor feedback to learners and individualised learning activities including supervised practice, reflective learning and

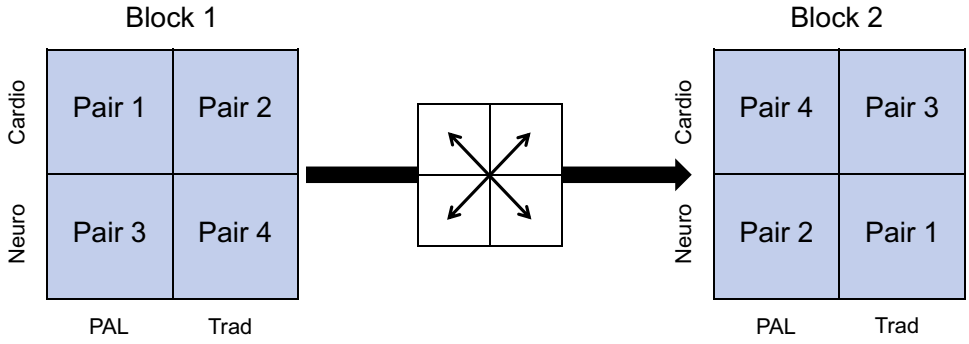

Figure 1. Trial design.
Cardio = cardiothoracic clinical placement, Neuro = neurological clinical placement, PAL = peer-assisted learning model, Trad = traditional model.

Table 1
The peer-assisted learning model.[21]

Domain	Feedback				Clinical reasoning	Risk identification
Tool	Peer feedback book	Educator feedback book	Peer observation form	Verbal feedback triad	SNAPPS[32]	Complexity-Risk Matrix[33]
Structure	Unstructured	Unstructured	Structured	Unstructured	Structured	Structured
Minimum frequency	2/student/wk	2/student/wk	2/student/wk	1/pair/wk	3/pair/wk	2/pair/placement

assessment. Peer-assisted learning activities were not scheduled or facilitated.

Outcome measures

Outcome measures were defined a priori and completed by blinded assessors of clinical performance outcomes (who were not part of the investigative team), clinical educators and students (ie, self assessment). It was not possible to blind students or clinical educators to group allocation due to clear differences in the structure of the two education models.

Primary outcome

The primary outcome measure was the Assessment of Physiotherapy Practice, scored by blinded outcome assessors, supervising clinical educators, and students at the end of each 5-week placement. The Assessment of Physiotherapy Practice instrument is designed to monitor longitudinal evaluation of physiotherapy student performance in the clinical environment and has been shown to be reliable, with an ICC (2,1) of 0.92 (95% CI 0.84 to 0.96).[22] It has been validated against a range of other indicators (eg, stability in hierarchy of item difficulty, global rating scores) when applied by clinical educators who assessed students during at least 4 weeks of clinical placement.[23] The Assessment of Physiotherapy Practice comprises 20 items in seven key areas that map to the core competencies specified in the Australian Standards for Physiotherapy.[24] Each item is rated on a 5-level scale from 0 (infrequently/rarely demonstrates performance indicators) to 4 (demonstrates most performance indicators to an excellent standard). The total Assessment of Physiotherapy Practice score ranges from 0 to 80, with a higher score representing better performance. The standard error of measurement for the Assessment of Physiotherapy Practice was low and the minimal detectable change at 90% confidence was 7.9.[23]

Whilst the Assessment of Physiotherapy Practice ratings by the supervising clinical educator and the students were longitudinal, the blinded outcome assessors completed the Assessment of Physiotherapy Practice following a half-day observation of each student within the final 3 days of their placement. Although no data are currently available on the validity and reliability of the Assessment of Physiotherapy Practice when used over a half-day period, the instrument provided the best option because it had construct validity for assessment of the target outcome, was used by students and educators in formative feedback on performance during the placement, was practical and feasible, and assessors were experienced in its application. The half-day assessment was chosen as it afforded the introduction of blinded assessment, in comparison to the longitudinal assessments undertaken by clinical educators who could not be blinded to the education model being delivered.

Secondary outcomes

Satisfaction with the teaching and learning experience on completion of each model was measured via survey for both the supervising clinical educator and the student.

Clinical educators recorded a range of workplace statistics, including number of patients seen, time spent on administrative tasks, direct teaching, student supervision, and quality assurance activities. Educator workload statistics were recorded at the end of each day on a form generated during the model development phase.[21] Days where educators were absent were excluded from the results.

Students recorded a range of learning activity statistics, including number of times treating patients, observing, providing peer feedback, and engaging in facilitated peer learning activities. Learning activity statistics were recorded on a daily basis, using a form created by educator participants during the model development.[21] Days where students were absent were excluded from the results.

The Likert scale responses in the surveys were defined as: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

Data analysis

The Assessment of Physiotherapy Practice score was compared between groups using linear regression analysis. As this was a crossover trial, data were clustered by participants, and robust variance estimates were calculated to account for this data dependency. The overall between-group result was not adjusted for student characteristics, as student participants contributed equally to both groups. When analysing the Assessment of Physiotherapy Practice scores by clinical area (cardiothoracic and neurological), the results were adjusted for pre-clinical objective structured clinical examination (OSCE) score. In these clinical area-specific analyses, results were not clustered by participant, as each participant only contributed to one education approach within each clinical area.

Educator workload statistics were added across the 5-week block and divided by the number of days worked to yield an average number of minutes per day for each category. The between-group difference was analysed using a linear mixed model. In this model, a random-effect term for educator was nested within one for site, while education approach was a fixed effect. The educator survey results were analysed using the Wilcoxon signed-rank test as matched data. The number of student learning activities were added across the 5-week block and divided by the number days present to yield an average number of occurrences per day for each category. The between-group difference was analysed using a linear mixed model regression. The student survey results were also analysed using the Wilcoxon signed-rank test.

Results

Compliance with the trial method

There were no dropouts in this study, but four student participants did not consent to being observed by the blinded outcome assessor. Therefore, the participant number for this outcome measure was 20, not 24. One educator did not complete the survey. Eight students did not complete the end-of-unit satisfaction survey.

Characteristics of the participants

The six blinded assessors had more than 5 years of experience in clinical practice and clinical education. They had current or recent experience with physiotherapy students, either teaching on-campus and/or as a clinical educator. The 14 clinical educators were mostly aged between 20 and 30 years with a Bachelor-level

Table 2
Characteristics of blinded assessors, clinical educators and students.

Characteristic	Blinded assessors (n = 6)	Clinical educators (n = 14)	Students (n = 24)
Age (yr), n (%)			
18 to 20	0 (0)	0 (0)	8 (33)
20 to 25	0 (0)	4 (29)	13 (54)
25 to 30	0 (0)	8 (57)	3 (13)
30 to 35	2 (33)	2 (14)	0 (0)
35 to 40	2 (33)	0 (0)	0 (0)
> 40	2 (33)	0 (0)	0 (0)
Gender, n female (%)			14 (58)
Qualification level, n (%)			
Bachelor	3 (50)	11 (79)	
Graduate diploma	2 (33)	1 (7)	
Master	1 (17)	2 (14)	
Tertiary education (yr), n (%)			
2			16 (67)
4			2 (8)
5 +			6 (25)
Clinical practice experience (yr), n (%)			
1 to 3	0 (0)	5 (36)	
3 to 5	0 (0)	5 (36)	
5 to 10	2 (33)	4 (28)	
> 10	4 (67)	0 (0)	
Clinical education experience (yr), n (%)			
< 1	0 (0)	3 (22)	
1 to 4	0 (0)	7 (50)	
5 to 10	3 (50)	4 (28)	
> 10	3 (50)	0 (0)	
Time since engagement with students, n (%)			
current	4 (67)		
1 to 3 yr	2 (33)		
Involvement with students, n (%)			
on-campus teaching	1 (17)		
clinical educator	2 (33)		
both	3 (50)		
Confidence in clinical education, n (%)			
neutral		6 (42)	
somewhat confident		4 (29)	
confident		3 (22)	
very confident		1 (7)	
Students educated (n/yr), n (%)			
1 to 3		5 (36)	
4 to 6		4 (28)	
8 to 12		5 (36)	
Prior experience with peer-assisted learning, n (%)		0 (0)	

qualification. Their time in clinical practice and in clinical education ranged from < 1 to 10 years. The average number of students they had educated per year before the study ranged from one to 12, indicating variable experience levels. Only one clinical educator felt 'very confident' in their clinical education skills and none had prior experience with peer-assisted learning. Students (n = 24) were mostly aged between 18 and 25 years and two-thirds had completed two years of tertiary education prior to clinical placements (Table 2).

Primary and secondary outcomes

Student performance

There were no significant differences in the Assessment of Physiotherapy Practice scores between the peer-assisted learning and traditional models, whether awarded by the blinded assessor, the supervising clinical educator or the students. Similarly, there were no significant differences in the Assessment of Physiotherapy Practice scores between the peer-assisted learning and traditional models when analysed by clinical area (Table 3).

Educator workload

Analysis of educator workload statistics revealed no significant between-group differences in any of the measured outcomes (Table 4), with the exception of time spent on direct teaching and non-student-related quality assurance tasks (eg, projects designed to improve the quality of patient care). Despite minimal significant differences in their daily workload data, educators reported that they were more satisfied with the balance of their workload in the traditional model (Table 4).

Educator satisfaction

On completion of both models, clinical educators reported that they were less satisfied with the peer-assisted learning model overall, and in the areas of student anxiety, personal stress, time available for client service and their ability to observe and gauge students' clinical ability (Table 5).

When asked to rate on a Likert scale (1 = strongly disagree to 5 = strongly agree), clinical educators had a neutral response about their confidence in facilitating the peer-assisted learning strategies during the designated peer-assisted learning block (median 3, IQR 3 to 4). Clinical educators also had a neutral response when asked if their educational style and behaviours varied substantially for both the peer-assisted learning and traditional clinical blocks (median 3, IQR 3 to 4). When asked which model they would prefer to use in the future, five educators stated they would use a 'flexible peer-assisted learning' model, four indicated they would return to a traditional model (but still in pairs), and four did not answer.

Student learning activities

There was no difference in the learning activities that students were exposed to in the areas of clinician observation, working without observation, receiving individual feedback, participating in team meetings, time observed by the educator, administration and statistics. In the peer-assisted learning model there was more time spent by students observing their peers perform a full assessment and treatment, and engaging in specific, facilitated peer interactions. Students received more verbal and written feedback in the peer-assisted learning model. There was also more time spent in family meetings in the peer-assisted learning model; however, this was reported by a relatively small number of participants. Five of the six pre-determined elements of the

Table 3
Student performance outcomes as measured by the Assessment of Physiotherapy Practice (regression adjusted for pre-clinical OSCE result).

APP scores	Blinded assessor (n = 20)			Educator (n = 24)			Student (n = 24)		
	PAL mean (SD)	Trad mean (SD)	Regression coefficient (95% CI) *p*	PAL mean (SD)	Trad mean (SD)	Regression coefficient (95% CI) *p*	PAL mean (SD)	Trad mean (SD)	Regression coefficient (95% CI) *p*
Total score (0 to 80)	40 (11)	43 (11)	−3 (−10 to 4) 0.430	46 (12)	46 (10)	0 (−7 to 7) 0.943	44 (9)	44 (10)	0 (−5 to 5) 0.999
Cardiorespiratory unit total score (0 to 80)	42 (9)	43 (13)	0 (−1 to 1) 0.978	47 (8)	43 (6)	0 (−1 to 0) 0.083	47 (7)	42 (3)	0 (−1 to 0) 0.250
Neurological unit total score (0 to 80)	39 (13)	43 (9)	0 (−1 to 1) 0.590	45 (16)	49 (13)	0 (−1 to 1) 0.909	41 (9)	47 (13)	0 (−1 to 1) 0.982

APP = Assessment of Physiotherapy Practice, OSCE = objective structured clinical examination, PAL = peer-assisted learning model, Trad = traditional model.

Table 4
Educator workload statistics and satisfaction with the teaching experience (n = 14).

Workload statistic	PAL	Trad	Linear mixed model coefficient (95% CI)	*p*-value
Time spent on tasks (min/day), mean (SD)				
direct student supervision	75 (37)	79 (48)	−3 (−15 to 9)	0.640
student-related administration tasks	19 (13)	15 (19)	2 (−2 to 7)	0.314
direct teaching	11 (12)	12 (15)	−4 (−7 to 0)	0.040
student assessment	14 (19)	13 (17)	0 (−5 to 5)	0.997
student feedback	21 (13)	19 (15)	3 (−1 to 7)	0.112
non-student-related administration tasks	79 (59)	75 (55)	6 (−6 to 17)	0.306
non-student-related quality assurance tasks	11 (18)	5 (11)	5 (1 to 10)	0.020
patient attributable activity	215 (77)	213 (104)	−5 (−28 to 18)	0.661
overtime	9 (10)	8 (10)	3 (0 to 5)	0.077
Combined caseload of educator and students (patients/day), mean (SD)	8 (3)	9 (3)	0 (−1 to 0)	0.240
Satisfaction with workload [a] (1 = strongly disagree to 5 = strongly agree), median IQR	2 (2 to 4)	3 (3 to 4)	−0.5 (−0.8 to −0.2)	0.000

PAL = peer-assisted learning model, Trad = traditional model.
[a] Agreement with the statement 'I was satisfied with the balance of my workload this week'.

Table 5
Educator survey results for each model at the end of intervention (n = 13).

Survey responses (1 = strongly disagree to 5 = strongly agree)	PAL	Trad	*p*-value
	Median (IQR)		
I was satisfied with the model of clinical education	2 (2 to 2)	3 (2 to 3)	0.002
I was effectively able to observe and gauge students' clinical ability	2 (2 to 2)	3 (3 to 3)	0.009
I found the clinical education model personally stressful	2 (2 to 3)	1 (1 to 2)	0.005
There was sufficient time available for client service	2 (2 to 2)	3 (2 to 3)	0.003
The students displayed a high degree of anxiety	2 (2 to 3)	1 (1 to 2)	0.008

PAL = peer-assisted learning model, Trad = traditional model.

peer-assisted learning model were performed significantly more often in the peer-assisted learning placement, indicating adherence to the trial protocol (Table 6).

Student Satisfaction

On completion of both models, students reported increased stress and reduced satisfaction with the peer-assisted learning model (Table 7). When asked to rate on a Likert scale (1 = strongly disagree to 5 = strongly agree), students reported no difficulty providing or receiving feedback from a peer. They had a neutral response regarding the value of their contributions to their peers' learning and to the value of their peers' feedback on their own learning. Students had a neutral-to-negative response about the value of the contribution the elements of the peer-assisted learning model made to their learning, with the exception of the clinical educator feedback book (Table 8).

When asked which model they would prefer to use in the future, 81% students indicated that they preferred the traditional model to the peer-assisted learning model.

Only one student reported an instance where they received conflicting knowledge, feedback or advice from the supervisor and peer, which did not adversely alter the outcome of the placement.

Table 6
Student placement profile (n = 24).

Aspect of student placement	PAL	Trad	Linear mixed model coefficient (95% CI)	*p*-value
Learning activities (n/day), mean (SD)				
observed clinician patient management	0.69 (0.90)	0.83 (1.07)	0.16 (−0.47 to 0.79)	0.622
observed another AHP delivering patient management	0.28 (0.41)	0.32 (0.51)	0.04 (−0.28 to 0.35)	0.809
observed peer performing an assessment	0.49 (0.43)	0.34 (0.47)	−0.16 (−0.38 to 0.07)	0.176
observed peer performing a treatment	0.46 (0.46)	0.26 (0.39)	−0.20 (−0.40 to 0.00)	0.056
observed peer performing a full assessment and treatment	0.27 (0.34)	0.11 (0.23)	−0.15 (−0.29 to −0.02)	0.028
worked with peer without direct clinician observation	0.99 (1.41)	0.39 (0.82)	−0.58 (−1.36 to 0.19)	0.140
worked individually without direct clinician observation	1.40 (1.52)	2.01 (1.51)	0.63 (−0.25 to 1.50)	0.161
worked without peer observation	1.82 (1.64)	1.19 (1.59)	−0.64 (−1.59 to 0.32)	0.191
received verbal feedback without peer present	0.61 (0.76)	1.05 (0.96)	0.45 (−0.04 to 0.93)	0.073
received feedback against the APP[22,23] without peer present	0.10 (0.12)	0.10 (0.12)	−0.01 (−0.05 to 0.04)	0.807
participated in family meeting	0.06 (0.14)	0.01 (0.04)	−0.05 (−0.09 to −0.01)	0.014
participated in team meeting	0.55 (0.64)	0.64 (0.55)	0.12 (−0.23 to 0.47)	0.504
observed by educator performing an assessment	0.77 (0.72)	1.27 (1.23)	0.51 (−0.00 to 1.03)	0.051
observed by educator performing a treatment	0.93 (0.85)	1.40 (1.46)	0.47 (−0.13 to 1.07)	0.122
observed by educator performing a full assessment and treatment	0.41 (0.47)	0.63 (0.74)	0.23 (−0.10 to 0.56)	0.170
observed by educator co-treating with a peer	0.09 (0.21)	0.20 (0.34)	0.11 (−0.04 to 0.26)	0.146
patient-related administration	0.36 (1.31)	0.23 (1.13)	−0.12 (−0.94 to 0.70)	0.777
Statistics	0.07 (0.26)	0.00 (0.12)	−0.07 (−0.21 to 0.06)	0.299
Elements of the peer-assisted learning model (n/day), mean (SD)				
discussed a completed SNAPPS[32] form	0.56 (0.30)	0.01 (0.08)	−0.54 (−0.65 to −0.44)	0.000
received written feedback in educator feedback book	0.51 (0.45)	0.20 (0.47)	−0.33 (−0.61 to −0.06)	0.018
received written feedback in peer feedback book	0.37 (0.29)	0.00 (0.00)	−0.36 −0.48 to −0.25)	0.000
completed Peer Observation Form	0.32 (0.22)	0.07 (0.28)	−0.26 (−0.42 to −0.09)	0.003
completed Complexity-Risk Matrix[33]	0.01 (0.05)	0.00 (0.03)	−0.01 (−0.03 to 0.01)	0.297
received verbal feedback with peer present	0.68 (0.53)	0.31 (0.41)	−0.37 (−0.63 to −0.10)	0.006

AHP = allied health professional, APP = Assessment of Physiotherapy Practice assessment tool, PAL = peer-assisted learning model, Trad = traditional model.

Table 7
Student satisfaction results for each model at the end of intervention (n = 16).

Survey responses (1 = strongly disagree to 5 = strongly agree)	PAL	Trad	*p*-value
	Median (IQR)		
I was satisfied with the model	2 (1 to 2)	3 (3 to 3)	0.001
In the model I received adequate education from my supervisor	2.5 (1 to 3)	3 (3 to 4)	0.052
I found it difficult to receive feedback from my supervisor	1 (1 to 1)	1 (1 to 1)	0.275
I found it difficult to discuss feedback with my supervisor	1 (1 to 2)	1 (0.75 to 2.25)	0.867
I found educational value from watching my supervisor working with a patient	4 (3 to 4)	3.5 (3 to 4)	0.103
I found educational value in my supervisor's feedback on my performance	3.5 (3 to 4)	3 (3 to 4)	0.471
I found the model personally stressful	2 (1 to 2)	3 (2 to 3.25)	0.018

PAL = peer-assisted learning model, Trad = traditional model.

One student sought assistance from the university unit co-ordinator over the duration of the study. The student was undertaking the traditional model at the time of the request for assistance.

Discussion

This study is the first randomised trial to investigate a peer-assisted learning model in the allied health sciences in a clinical education setting, and one of few randomised controlled trials to examine clinical education outcomes. The peer-assisted learning model produced similar student performance outcomes compared with a traditional approach. A recent randomised controlled trial investigating the use of simulation in clinical education also found comparable student outcomes across different models of clinical education.[25] This may indicate that 'traditional' clinical education can be altered without measurable change in student performance outcomes. Unlike simulation, the peer-assisted learning model does not require additional equipment and therefore may be more economically viable for health services and education providers.

The results demonstrate that students were not concerned by delivering feedback to a peer or receiving it from a peer, but placed higher value on the feedback delivered by the clinical educator. This finding of learners attributing more value to feedback provided by experts compared with feedback from peers is consistent with feedback studies in higher education.[26] If peer-assisted learning tasks could be made more valuable for students, this might play an important role in shifting the traditional view of supervision and feedback from one being led solely by the clinical educator, to one that is also shared among learners.

Physiotherapy clinical educators have previously reported that time spent directly teaching students is burdensome,[27] and that having students in the workplace takes time away from non-clinical tasks such as administration and quality assurance activities.[28] Peer-assisted learning works on the assumption that learners are intrinsically motivated, can act in a collaborative manner and do not require the clinical educator to direct all of their learning.[19] This notion of reduced reliance on the clinical educator was demonstrated in the results where, in the peer-assisted learning model, clinical educators spent significantly less time on direct teaching and more time on non-student-related quality assurance activities.

Interestingly, the reduction in the burden of direct teaching did not lead to greater satisfaction with the peer-assisted learning model. This may be because the introduction of the peer-assisted learning model represented a change in ideology and practice, and may have challenged clinical educators' traditional and more familiar practices. A previous study reported that peer learning processes challenge expectations of the educator's roles and responsibilities, and require a different understanding of ways to approach teaching and learning.[19] This may also explain why, despite there being no difference in the average number of patients seen or the student performance outcomes, clinical educators reported less satisfaction with the time available for client service and their ability to observe and gauge students' clinical abilities in the peer-assisted learning model. The implementation of the peer-assisted learning model as part of a research trial also involved additional data collection and administration, which may have added to the burden for both educators and students and contributed to dissatisfaction. The data collection was required for the outcomes of the trial, but would not be part of usual practice when implementing a peer-assisted learning model.

In the peer-assisted learning model, students spent more time in formalised peer learning tasks without sacrificing other elements of the clinical education placement. This may demonstrate that peer-assisted learning activities can be utilised in paired student placements without reducing access to other learning activities. It may have indicated that students in peer-assisted learning were able to use their 'downtime' (ie, time when, in the traditional approach, they may have been waiting for their clinical educator to direct their learning) to complete the designated peer-assisted learning tasks.

The rigid structure of the formal peer-assisted learning activities may have contributed to the dissatisfaction with the model, a notion that is supported by the clinical educators citing a preference for a 'flexible peer-assisted learning' model in the future. To ensure consistency in the research protocol, the formal elements of the peer-assisted learning model were prescribed and did not vary throughout the placement. Principles of learning dictate that an effective teaching strategy involves a progression of increasingly complex tasks as knowledge and skill increase.[29] Although it was theoretically possible to increase complexity of the task within the prescribed activities, this may have been difficult for clinical educators and students to execute, given that it was their first experience with the tools. If paired student placement models are utilised in clinical education, it may be important to consider incorporating flexibility in the type and number of peer-assisted learning activities facilitated each week, although the results of the trial may have been different if this approach had been tested.

Table 8
Student perceptions of peer-assisted learning model at the end of both units (n = 16).

Survey responses (1 = strongly disagree to 5 = strongly agree)	Median (IQR)
I had valuable contributions to make to my peer colleagues' learning	3 (3 to 4)
I found it difficult to receive feedback from a peer	2 (2 to 2)
I found it difficult to deliver feedback to a peer	2 (2 to 3)
I found educational value in my peer's feedback on my performance	3 (2.75 to 4)
The SNAPPS[32] form aided my learning	3 (2 to 3.25)
The complexity-risk matrix aided my learning	2.5 (2 to 4)
The peer observation record aided my learning	2 (1 to 3.25)
The peer feedback book facilitated my clinical education experience	2 (2 to 2.75)
The educator feedback book facilitated my clinical education experience	4 (4 to 4)
I found educational value in observing my peer receive feedback from the supervisor	3.5 (2 to 4)

The time allocated to familiarise students with the tools and expectations of the peer-assisted learning model in this study may have been insufficient, which may have contributed to students' relative dissatisfaction with the formal tools and the model itself. Students' willingness to engage in a different learning culture to traditional, teacher-led practices can affect their engagement with peer-assisted learning[19] and has been recognised as being important to clinical educators.[30] To help address this, it may be of benefit to introduce the various tools in the pre-clinical period, and to invest time in orientating learners about the evidence of both the short-term and long-term benefits of working with and learning with peers.[9–14,16,17,19,31] It is also possible that some elements of the peer-assisted learning model may have greater acceptability to students than others, and this will be the focus of ongoing investigations.

The project was conducted in one health service with one group of clinical educators, which limits generalisability. Clinical educator participants were volunteers and therefore a self-selecting group. Issues may have been missed that related specifically to clinical educators who did not volunteer. For example, clinical educators who volunteered may have been particularly enthusiastic or motivated about their clinical education role. There was potential for response bias in the survey, as participants may have built a relationship with the lead investigator through the research process.

In trials of educational approaches, keeping the intervention consistent with a protocol can be seen as a limitation because it is counter to best practice educational principles, such as tailoring activities to the individual and increasing complexity as the student's mastery improves. However, the minimum number of tasks in the peer-assisted learning approach was necessary to permit measurement of adherence.

The reliability and validity of the Assessment of Physiotherapy Practice tool over a half-day observation, as was conducted by the blinded assessors, has not been investigated. However, the Assessment of Physiotherapy Practice has construct validity for such an application and a superior method for assessment of clinical performance in physiotherapy clinical education was not available. In addition, the results did not differ when longitudinal assessments by educators were considered and the Assessment of Physiotherapy Practice has been demonstrated to be both reliable and valid under these conditions.

Clinical educators developed and then immediately tested the peer-assisted learning model, with no opportunity to refine the model based on their practical experiences. Educators and students were learning and testing the model simultaneously, which may have affected the results.

Despite resulting in equivalent student performance outcomes, there was resistance to using the peer-assisted learning model from both learners and educators. For learners, expert observation of performance and expert delivered feedback is preferred over peer observation because 'it means more' (more understanding of performance standards, more experience in observation, more strategies for improvement tested). For educators, a strict peer-assisted learning model may represent threats to patient/student safety, to quality feedback and to well-worn, familiar routines in clinical supervision. The resistance needs to be acknowledged, and more studies are required to determine whether the challenge is in the change of routine for both parties (expanding the envelope of comfort) or simply because the peer-assisted learning activities are not as potent as teacher-led activities.

Further research could evaluate whether incorporating peer-assisted learning activities into a paired student placement in a flexible way optimises clinical educator and student satisfaction. There may be improvement in clinical educator and student satisfaction if certain peer-assisted learning activities become more familiar and are incorporated into 'usual practice' or there may remain a strong preference for traditional, supervisor-led learning activities. Longitudinal studies could investigate how students evolve in their peer learning practices over time, and whether these competencies influence their capacities to operate in the workforce.

While peer-assisted learning activities were integrated into the clinical education of paired students without sacrificing student performance outcomes, both educators and students were more satisfied with the traditional approach. The peer-assisted learning model provided some benefits to educator workload, with clinical educators reducing time spent on direct teaching and increasing time available for quality assurance activities. Students received more written feedback in the peer-assisted learning model, but preferred educator feedback over peer feedback. Students and educators cited the rigidity of the model as a source of dissatisfaction. It is therefore recommended that clinical educators using a paired student model incorporate flexibility in the type and number of learning activities facilitated in the placement.

What is already known on this topic: Peer-assisted learning incorporates learning activities undertaken by student pairs and educators to facilitate peer interaction using guided strategies. The peer-assisted learning model has potential advantages in the clinical education of physiotherapy students.
What this study adds: The peer-assisted learning model and a traditional paired model of clinical education produced similar student performance outcomes. The peer-assisted learning model produced some modest benefits: educators had more time for other work activities and students received more written feedback. Despite this, educators and students preferred the traditional model.

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